

SystemC CCI WG Hiding Parameters

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Hiding Parameters

- Objective of the present example is to demonstrate the following :
 - Constructing and activating a private broker to restrict access to the parameters

This example also exhibits the ability to manage complex interdependencies as described in Parameter Hiding (UC13)



Example Explanation

- A small subsystem (parent and child module) are wrapped within a module (ex14_private) to control visibility of the contained parameters
- The wrapper makes it easy to:
 - Establish scope of the private broker as the entire subsystem
 - Identify exceptions (parameters to be exposed) prior to construction of any subsystem parameters
- Note: the subsystem doesn't need to be modified itself to make this happen



Example Illustration (1)

Top module

configurator

Initialize handle to *parent_int_buffer* parameter of the PARENT

wrapper

- Initialize and register a private broker of type cci_utils::broker (pbroker)
- Identify in advance the parameters to be exposed pbroker.expose.insert("Top.private.parent_inst.parent_int_buffer"); pbroker.expose.insert("Top.private.parent_inst.child_inst.pub_int_param");
- Then instantiate the parent module
 m_parent_inst = new ex14_parent("parent_inst");

parent

- Instantiate the child module : child_inst("child_inst")
- Constructs parameters as shown below: parent_int_param("parent_int_param", 300); parent_buffer("parent_int_buffer", 350);

child

cci::cci_param<int> priv_int_param with a DEFAULT VALUE of 100
cci::cci_param<int> pub_int_param with a DEFAULT VALUE of 150



Example Illustration (2)

Infrastructure implemented within the model for making necessary value changes to the private parameter of 'child' Stores param handle of *parent_int_buffer* (publicly visible) configurator parent POST_WRITE callback implemented on parameter parent_buffer so that when a change occurs on the parent_buffer of the parent module, the same will be reflected on to the priy_int_param of the child module **NOTE:** In this case, only **parent_buffer** of *PARENT* module and **pub_int_param** of *CHILD* module can write to the *priv_int_param* of the child module directly child priv_int_param pub int param Top module



Example Illustration (3)

Demonstrating Parameter Hiding

Get visible parameters list using **m_broker.get_param_handles()**; where, m broker(cci::cci broker manager::get broker()); configurator Top.parent_inst.child_inst.pub_int_param Top.parent_inst.parent_int_buffer parent Top.private.parent_inst.child_inst.priv_int_param Get visible parameters list using **m_broker.get_param_handles()**; Top.private.parent inst.parent int param Top.private.parent_inst.child_inst.pub_int_param where, m broker(cci::cci broker manager::get broker()) Top.private.parent inst.parent int buffer child Top.private.parent inst.child inst.priv int param Get visible parameters list using **m_broker.get_param_handles()**; Top.private.parent inst.parent int param Top.private.parent_inst.child_inst.pub_int_param where, m broker(cci::cci broker manager::get broker()) Top.private.parent_inst.parent_int_buffer Top module



Example Illustration (4)

Illustrating the flow when a valid value change is to be done to a private parameter (Implemented via callbacks) Write new value 1000 to the parent int buffer using set cci value(...) parent_param_handle.set_cci_value(cci::cci_value(1000)); configurator parent Default Value: 300 Parameter Name : parent_int_param New Value: 1000 Parameter Name : parent_int_buffer child New Value: 1000 Parameter Name: priv int param Parameter Name: pub int param Default Value: 150 Top module



Expected Output (ex14_Hiding_Parameters.log)

```
SystemC Simulation
Info: Top.private.parent inst.child inst: @0 s, [CHILD C TOR] : Is Private Broker? : true
Info: Top.private.parent inst.child inst: @0 s, [CHILD C TOR] : Parameter Name
                                                      Parameter Value : 100
Top.private.parent inst.child inst.priv int param
Info: Top.private.parent inst.child inst: @0 s, [CHILD C TOR] : Parameter Name
Top.private.parent inst.child inst.pub int param
                                                      Parameter Value: 150
Info: Top.private.parent inst: @0 s, [PARENT C TOR] : Parameter Name :
Top.private.parent inst.parent int param
                                           Parameter Value : 300
Info: Top.private.parent inst: @0 s, [PARENT C_TOR] : Parameter Name :
Top.private.parent inst.parent int buffer Parameter Value : 350
Info: sc main: Begin Simulation.
Info: Top.param cfgr: @0 s, [CFGR] : Parameter Name : Top.private.parent inst.parent int buffer
          Parameter Value: 350
Info: Top.private.parent inst.child inst: @0 s, @ 0 s Visible parameters to 'child' module
Info: Top.private.parent inst.child inst: @0 s, [CHILD] : Parameter Name :
Top.private.parent inst.child inst.priv int param
Info: Top.private.parent inst.child inst: @0 s, [CHILD] : Parameter Name :
Top.private.parent inst.parent int param
```



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```
Info: Top.private.parent inst.child inst: @0 s, [CHILD] : Parameter Name :
Top.private.parent inst.child inst.pub int param
Info: Top.private.parent inst.child inst: @0 s, [CHILD] : Parameter Name :
Top.private.parent inst.parent int buffer
Info: Top.private.parent inst: @5 ns, @ 5 ns
                                                     Visible parameters to the 'parent' module
Info: Top.private.parent inst: @5 ns, [PARENT] : Parameter Name :
Top.private.parent_inst.child_inst.priv_int_param
Info: Top.private.parent inst: @5 ns, [PARENT] : Parameter Name :
Top.private.parent inst.parent int param
Info: Top.private.parent inst: @5 ns, [PARENT] : Parameter Name :
Top.private.parent inst.child inst.pub int param
Info: Top.private.parent inst: @5 ns, [PARENT] : Parameter Name :
Top.private.parent inst.parent int buffer
Info: Top.param cfgr: @15 ns, @ 15 ns
                                      Visible parameters to the 'configurator' module
Info: Top.param cfgr: @15 ns, [CFGR] : Parameter Name :
Top.private.parent inst.child inst.pub int param
Info: Top.param cfgr: @15 ns, [CFGR] : Parameter Name : Top.private.parent inst.parent int buffer
Info: Top.param cfgr: @20 ns, @ 20 ns
```



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